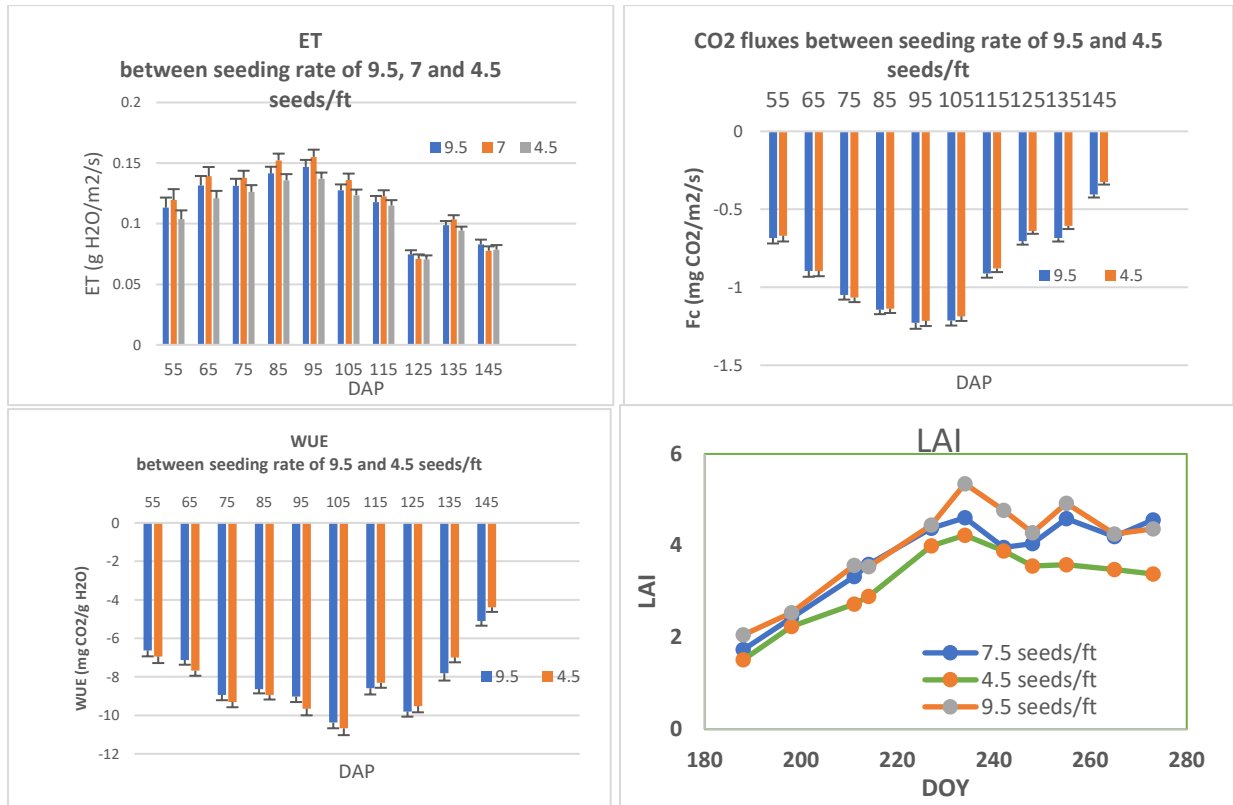


## Impact of Seed Rate on Peanut Water-use Efficiency and Yield

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The three-year study aims to determine the impact of seed rate on water-use efficiency and yield at the field scale. This experiment was conducted at the Southwest Research and Education Center in Plains, GA. Three large adjacent fields were planted with 3 seed rates (4.5 seeds/ft, 7.5 seeds/ft & 9.5 seeds/ft).

The eddy-covariance system consists of a sonic anemometer CSAT3 (Campbell Scientific Inc., Logan, UT), and a fast-response CO<sub>2</sub>/H<sub>2</sub>O analyzer Li-7500 (Li-Cor Biosciences, Lincoln, NE) installed on a tripod at about 1.5 m above the ground in each field. It measures and saves the three-dimensional wind components, temperature, and concentration of water vapor and carbon dioxide in 10 Hz with a CR1000 datalogger (Campbell Scientific Inc., Logan, UT). The leaf area index in each field was measured using a plant canopy analyzer LAI-2000 (Li-Cor Biosciences, Lincoln, NE) each week.



Fluxes of water vapor and CO<sub>2</sub>, and water-use efficiency of the peanut ecosystems. Preliminary results from 2020 suggest that the planting density of 9.5 seed/ft had a greater leaf area index than 7 seed/ft, followed by 4.5 seed/ft. CO<sub>2</sub> flux data suggests that there was no significant difference between 9.5 seeds/ft and 4.5 seed/ft at the early stage, but 9.5 seeds/ft showed greater CO<sub>2</sub> flux at later stages. water-use efficiency was greater for 7 seed/ft than in 9.5 seeds/ft and 4.5 seeds/ft. The water-use efficiency was also found to be greater in the 4.5 seeds/ft than in the 9.5 seeds/ft planting density during the early growth stage, while it was reverse during the late growth stage. The yield was found to be greatest for the 7 seeds/ft and smallest for the 4.5 seeds/ft density. More experimental data is called for specially obtained in contrasting climate conditions.